

WALK-THRU SURVEY REPORT  
OF  
CALAVERAS ASBESTOS LTD  
AT  
COPPEROPOLIS, CALIFORNIA

Survey Conducted By:  
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Report Written By:  
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Mining and Minerals Section  
Engineering Control Technology Branch  
Division of Physical Sciences and Engineering  
National Institute for Occupational Safety and Health

Cincinnati, Ohio

PURPOSE OF SURVEY: To perform a preliminary survey of the Asbestos Bagging operations at Calaveras Asbestos Ltd.

PLANT ADDRESS: Calaveras Asbestos Ltd  
P. O. Box 127  
Copperopolis, California 95228

EMPLOYER REPRESENTATIVES

CONTACTED: Stan Hinton, Production Supervisor  
Michael R. Dell'Orto, Director of Purchasing  
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Joey E. Toney, Director of Environmental Affairs

EMPLOYEE REPRESENTATIVES

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STANDARD INDUSTRIAL

CLASSIFICATION CODE: SCI Code 3292

ANALYTICAL WORK PERFORMED BY: None.

## ABSTRACT

A preliminary survey was conducted at Calaveras Asbestos Operation near Copperopolis, California in conjunction with a NIOSH study evaluating measures used to control occupational health hazards associated with the packaging processes used for dry chemicals. A large number of workers in a variety of industries are involved in the packaging process. The company has several engineering controls (packaging system, automatic palletizer, use of shrink wrap, ventilation controls during fiber processing, and housekeeping practices) considered to be exemplary. An in-depth study at this operation is recommended.

## I. INTRODUCTION

The Engineering Control Technology Branch of the Division of Physical Sciences and Engineering, NIOSH, is conducting a research study to assess and document the exemplary technology available for the control of airborne dust in dry chemical bagging and filling operations. The control technology studies will be described in sufficient detail to allow the information to be used to prevent or reduce the generation and transmission of the dust in similar industrial operations. The results of the assessment will be disseminated in a manner that will maximize the application of demonstrated control technologies in the workplace.

A survey of the processing operation for asbestos was conducted to determine the suitability of this plant for an in-depth study. Engineering control technology observed included: engineering controls, work practices, and personal protective equipment. In the area of materials handling, Calaveras had several types of controls considered to be exemplary and is recommended for an in-depth study.

## II. PLANT DESCRIPTION

Calaveras, a privately owned company, produces raw asbestos (long fiber variety) used in products such as cement, transite pipe, transite sheeting for building sides, and brake pads. Most of these products are exported.

The mine and plant are located in the foothills of the Sierra Nevada Mountains, a rural area 40 miles east of Stockton, California. The plant has been packaging asbestos fibers since 1962. The complex consists of several buildings with the main building housing the packaging operation being of primary interest. The 7 story building (steel frame with corrugated cement asbestos siding and solid concrete floors between each of the levels) has approximately 9680 square ft. of floor space per level. The packaging operation (bagging, palletizing,

and conveying) occupies approximately a quarter of the ground floor. The grounds around and beneath the various structures are mainly compacted earth with some areas being covered with asphalt. This union (Construction Production and Maintenance Labors Number 1130) plant employees 170 plus 30 supervisory and administrative personnel. The mill operates 5 days per week, 24 hours per day to produce 3 groups of fibers, all of which are bagged and shipped by truck.

### III. PROCESS DESCRIPTION

Approximately 1,200,000 tons of ore and 30,000 tons of fiber are processed annually. The ore comes from an open pit bench mine (blasted and loaded into trucks) and hauled to the primary and secondary crusher (jaw, cone, and impact crushers) area at the top of the pit. The minus 3/8 inch ore is transported approximately a quarter mile by a belt conveyor to the plant area, dried (tower and rotary kilns), and placed in dry rock storage. In the main building, the ore is beneficiated in a process developed by the Canadians in which the various fiber lengths are separated by vacuum techniques.

The company produces 4 group (3/8 inch long) and 6 group (1/8 inch long) fibers. In the past, they also produced float fibers (very short fibers) but eliminated this product in 1976 due in part to the difficulty in controlling the fiber dust. The asbestos fibers, a fluffy material (like cotton), are packed into 100 pound bags using a hydraulic pressure packer designed by Lynn MacCloud, Canadian Ind. This nine year old unit forms a slightly spongy cake or bale which is pushed into the bag. The compactness of these cakes varies, depending on the fiber length. Mostly, open-mouth poly woven bags, manufactured by Banner Packaging, Calgary, Canada are used. Also, some open mouth paper bags are used. The filled bag is conveyed a few feet, sewn shut (Fischbein Sewing Machine), and conveyed to an automatic palletizer, manufactured by Columbia Palletizer. The palletized loads are fork lifted to the shrink wrap station, sealed and either placed in storage or loaded into trucks for shipment.

#### IV. DESCRIPTION OF PROGRAMS

All employees are required to have pre-placement and periodical physicals which include x-rays, pulmonary, audiograms, and other test. Some physical test such as pulmonary and audiograms are also performed periodically at the plant. Monitoring, both personal and area sampling, are routinely conducted. Personal samples are taken semi-annually and area samples taken daily. The company follows the chrysotile asbestos standards of 2 fibers per cubic centimeter. Personal protective equipment required is respirators, hard hats, safety glasses, and safety shoes. The main respirator used is 3-M's 8710 disposable. In certain areas, airstream hats are used. Safety training follows MSHA's program. Housekeeping is continually being performed, emphasizing cleanliness of the floors and equipment.

#### V. SAMPLE DATA FROM PRELIMINARY PLANT SURVEY

No samples were taken during the survey.

#### VI. DESCRIPTION OF CONTROL STRATEGY

The company demonstrated several engineering controls throughout the process. The abrasive ore rapidly wore holes in ore chutes and the pneumatic conveying systems. Wear plugs were designed and inserted in the ore chutes. Steel lines were replaced with ceramic lined steel lines and the elbows modified in the pneumatic system. Lines which had developed leaks in as little as a day now lasted three years. Other wear resistant materials such as impact rubber were tried in ore chutes but seldom lasted more than 24 hours.

Canvas with velcro fasteners replaced plastic view ports for the screens. The plastic would, in a short time, become translucent, making it useless as a view port. The advantage of the canvas is that it could easily be pulled back for observation purposes and then replaced to maintain a barrier to the dust source.

Earlier, the company used force flow packers to blow the asbestos fibers into bags. To reduce the dusting problems of this operation, a pressure packer was installed in which the fibers were pressed into a cake and then placed in a bag. Also, shrink wrap is used over each pallet load to form a complete envelope around the load.

The company considers housekeeping to be very important. They have a large maintenance department to keep the equipment in good operating condition. Also, on each floor of the main building, there is a Hoffman portable vacuum cleaner, manufactured by Hoffman Air and Filtration Systems, Syracuse, New York. A man is assigned one or two floors and is responsible for keeping them clean.

The company has painted the equipment, pipelines, and floors. The pipe lines, painted certain colors for certain process, aids in training new employees. The painted floors are easier to keep clean and overall, improves the appearance of the work area and the moral of the worker.

Monitoring (area samples) is performed daily and personal samples semi-annually.

#### VIII. CONCLUSIONS AND RECOMMENDATIONS

In the area of solid materials handling (conveying and packaging), the company has several exemplary engineering controls which warrant an in-depth study. These include the controls used to reduce fiber generation into the workers environment during beneficiation (separation of the various fiber lengths) and packaging (bagging and palletizing). Also, the company use exemplary housekeeping practices to keep the work areas clean.

It is recommended that an in-depth survey be conducted at this plant.